# Ticketing  System

**Architecture:**

The ticketing system is based on the client-server model implemented using socket programming in Java. The server is a concurrent server which is capable of handling multiple clients simultaneously. The server runs on a well known port and waits for incoming connections. The clients can connect to the server using its host address and port number.
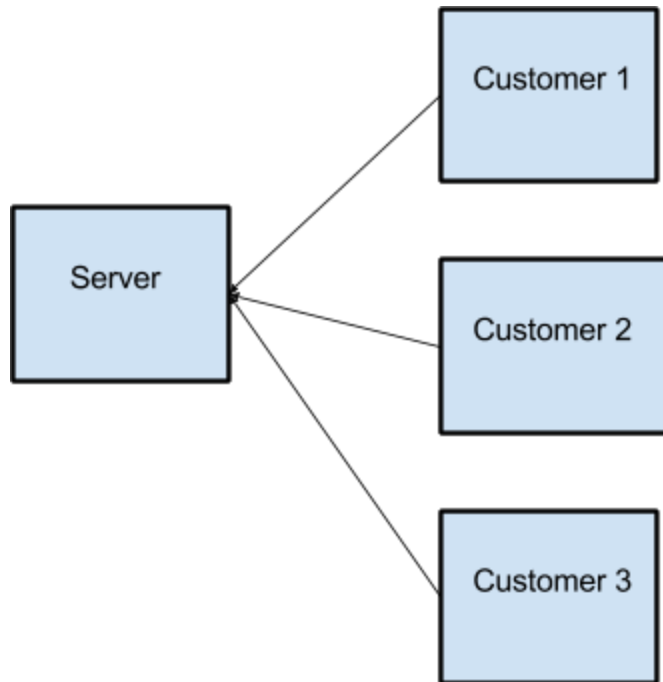


**Features:**

The server has a Venue Object which holds the information such as number of rows in the venue, number of seats per row, total available rows etc. Server is capable of performing the following functions.

1. **Register**

    When a client connects to the server, client has to register itself using the email address before making a reservation.

2. **Find and Hold Seats**

    The client can specify the number of seats to be held.

3. **Reserve**

    The client will have up to a predefined time (in seconds) to confirm the reservation. If the timer expires, the held seats will be released by the server. The client has to book again.

4. **Display Reservation Information**

    The client can query the server to display the reservation information.

**Assumptions:**
1. Boundary conditions:
    a. No of rows is >= 1
    b. No of seats per row is >= 1
2. All rows will have equal number of seats
3. A user can have multiple reservations. Once registered a user can perform multiple reservations.

**Defaults**:
    The defaults can be changed in Constants.java file under codingchallenge.constants package.
1. No of rows = 10
2. Seats per row = 10
3. Timeout for holding seats = 10 secs
4. Server Port = 9999

**Algorithm:**
The algorithm makes best effort to place people in a group adjacent to each other but it is not guaranteed. Algorithm uses a **binary search** approach to find and hold seats for a specific group of people specified by the user. The time complexity will be log N to search and hold seats for the user.

**Tools Used:**
The project can be compiled and run on Java 8.
The following maven dependencies have been used.
1. Log4j - logging
2. Jacoco - Running unit tests and generating reports
3. JUnit - Unit tests

**Screenshots:**

**Server Startup**



```
us173772:ticket-reservation-system ssuryanarayan17$ java -cp target/codingchallenge-1.0-SNAPSHOT-jar-with-dependencies.jar codingchallenge.ServerInit 9002 5 10
2017-11-12 21:46:22 INFO  ServerInit:36 - No of rows: 5
2017-11-12 21:46:22 INFO  ServerInit:37 - No of seats per row: 10
2017-11-12 21:46:22 INFO  ServerInit:44 - Ticketing Server is listening on port 9002
2017-11-12 21:46:22 INFO  ServerInit:45 - Waiting for incoming client connections..
```

## Client StartUp

```
Last login: Sun Nov 12 18:13:41 on ttys001
[us173772:ticket-reservation-system ssuryanarayan17$ java -cp target/codingchallenge-1.0-SNAPSHOT-jar-with-dependencies.jar codingchallenge.ClientInit localhost 9002
2017-11-12 21:47:01 INFO  ClientHandler:33 - Establishing connection. Please wait ...
2017-11-12 21:47:01 INFO  ClientHandler:37 - Connected: Socket[addr=localhost/127.0.0.1,port=9002,localport=52454]
2017-11-12 21:47:01 INFO  ClientHandler:43 - Welcome to ticketing system!
2017-11-12 21:47:01 INFO  ClientHandler:45 - Please enter your email id to register
```

## Client Registration

```
Last login: Sun Nov 12 18:13:41 on ttys001
[us173772:ticket-reservation-system ssuryanarayan17$ java -cp target/codingchallenge-1.0-SNAPSHOT-jar-with-dependencies.jar codingchallenge.ClientInit localhost 9002
2017-11-12 21:47:01 INFO  ClientHandler:33 - Establishing connection. Please wait ...
2017-11-12 21:47:01 INFO  ClientHandler:37 - Connected: Socket[addr=localhost/127.0.0.1,port=9002,localport=52454]
2017-11-12 21:47:01 INFO  ClientHandler:43 - Welcome to ticketing system!
2017-11-12 21:47:01 INFO  ClientHandler:45 - Please enter your email id to register
sais@gmail.com
2017-11-12 21:47:34 INFO  ClientHandler:56 - Registered Successfully.
2017-11-12 21:47:34 INFO  ClientHandler:64 -
---------- Enter your choice: ----------
1. Book Seats
2. Show total Available Seats
3. View Reservation
4. Exit
------------------------------------
```

## Client -1  Hold and Reserve Tickets

```
2017-11-12 21:47:01 INFO  ClientHandler:43 - Welcome to ticketing system!
2017-11-12 21:47:01 INFO  ClientHandler:45 - Please enter your email id to register
sais@gmail.com
2017-11-12 21:47:34 INFO  ClientHandler:56 - Registered Successfully.
2017-11-12 21:47:34 INFO  ClientHandler:64 -
---------- Enter your choice: ----------
1. Book Seats
2. Show total Available Seats
3. View Reservation
4. Exit
------------------------------------
1
2017-11-12 21:48:01 INFO  ClientHandler:74 - Enter the number of seats to book
10
2017-11-12 21:48:03 INFO  ClientHandler:89 - Reservation Id:100 Row Number:3 Seat Number(s):1-10
2017-11-12 21:48:03 INFO  ClientHandler:92 - You have upto 20 seconds to confirm your seats. Please type yes or no
yes
2017-11-12 21:48:07 INFO  ClientHandler:97 - Reservation Id:100 Row Number:3 Seat Number(s):1-10
2017-11-12 21:48:07 INFO  ClientHandler:64 -
---------- Enter your choice: ----------
1. Book Seats
2. Show total Available Seats
3. View Reservation
4. Exit
------------------------------------
```

## Client-2 Hold and Reserve Tickets

```
Last login: Sun Nov 12 21:46:51 on ttys003
us173772:ticket-reservation-system ssuryanarayan17$ java -cp target/codingchallenge-1.0-SNAPSHOT-jar-with-dependencies.jar codingchallenge.ClientInit localhost 9002
2017-11-12 21:49:12 INFO  ClientHandler:33 - Establishing connection. Please wait ...
2017-11-12 21:49:12 INFO  ClientHandler:37 - Connected: Socket[addr=localhost/127.0.0.1,port=9002,localport=52458]
2017-11-12 21:49:13 INFO  ClientHandler:43 - Welcome to ticketing system!
2017-11-12 21:49:13 INFO  ClientHandler:45 - Please enter your email id to register
abc@gmail.com
2017-11-12 21:49:22 INFO  ClientHandler:56 - Registered Successfully.
2017-11-12 21:49:22 INFO  ClientHandler:64 -
---------- Enter your choice: ---------
1. Book Seats
2. Show total Available Seats
3. View Reservation
4. Exit
--------------------------------------
1
2017-11-12 21:49:24 INFO  ClientHandler:74 - Enter the number of seats to book
20
2017-11-12 21:49:25 INFO  ClientHandler:89 - Reservation Id:101 Row Number:2 Seat Number(s):1-10 Row Number:5 Seat Number(s):1-10
2017-11-12 21:49:25 INFO  ClientHandler:92 - You have upto 20 seconds to confirm your seats. Please type yes or no
yes
2017-11-12 21:49:27 INFO  ClientHandler:97 - Reservation Id:101 Row Number:2 Seat Number(s):1-10 Row Number:5 Seat Number(s):1-10
2017-11-12 21:49:27 INFO  ClientHandler:64 -
---------- Enter your choice: ---------
1. Book Seats
2. Show total Available Seats
3. View Reservation
4. Exit
--------------------------------------
```

# Client -1 View Reservation

```
2017-11-12 21:47:01 INFO  ClientHandler:43 - Welcome to ticketing system!
2017-11-12 21:47:01 INFO  ClientHandler:45 - Please enter your email id to register
sais@gmail.com
2017-11-12 21:47:34 INFO  ClientHandler:56 - Registered Successfully.
2017-11-12 21:47:34 INFO  ClientHandler:64 -
---------- Enter your choice: ---------
1. Book Seats
2. Show total Available Seats
3. View Reservation
4. Exit
--------------------------------------
1
2017-11-12 21:48:01 INFO  ClientHandler:74 - Enter the number of seats to book
10
2017-11-12 21:48:03 INFO  ClientHandler:89 - Reservation Id:100 Row Number:3 Seat Number(s):1-10
2017-11-12 21:48:03 INFO  ClientHandler:92 - You have upto 20 seconds to confirm your seats. Please type yes or no
yes
2017-11-12 21:48:07 INFO  ClientHandler:97 - Reservation Id:100 Row Number:3 Seat Number(s):1-10
2017-11-12 21:48:07 INFO  ClientHandler:64 -
---------- Enter your choice: ---------
1. Book Seats
2. Show total Available Seats
3. View Reservation
4. Exit
--------------------------------------
3
2017-11-12 21:50:46 INFO  ClientHandler:120 -
****** Reservation Details ******
Reservation Id:100 Row Number:3 Seat Number(s):1-10
*******************
2017-11-12 21:50:46 INFO  ClientHandler:64 -
---------- Enter your choice: ---------
1. Book Seats
2. Show total Available Seats
3. View Reservation
4. Exit
--------------------------------------
```